Ali Kuwajerwala

M.Sc. Candidate, University of Montréal & Mila

alihusein.kuwajerwala@umontreal.ca | linkedin.com/in/alihkw | github.com/alik-git | alihkw.com

Actively seeking internships in machine learning and/or robotics for summer 2022.

Experience

Applied Scientist Intern, Amazon Summer 2022
Alexa AI Team, Amazon Devices *(Toronto, ON)*

- Improved the accuracy of the existing conversational **NL2SQL** system by **1%** on the **Spider** NL2SQL dataset.
- Prototyped alternative model architectures to overcome the 512 token length limitation in existing models.
- Streamlined the team's **AWS** model development cycle by automating multiple processes in the codebase.

Machine Learning/Software Engineer, Liquid Analytics (Startup) Summer 2021
Perform AI Application, Core Algorithms Team *(Remote, US)*

- Developed highly scalable algorithms in **Julia** to quickly process logistics data for large distribution companies.
- Set up queing infrastructure using **AMQP** and **RabbitMQ** to handle upto 300,000 requests each second.
- Deployed **AWS** services to efficiently host our software in the cloud, simplifying the CI/CD pipeline.

Robotics Researcher, RVL Lab Sep. 2020 – Apr. 2021
Robot Vision and Learning Lab, University of Toronto *Toronto, ON*

- Developed novel data augmentation techniques for improved autonomous driving performance in mobile robots.
- Responsibilities: data collection, performing simulation experiments, designing/debugging the ANN architectures.
- Performed real robot experiments with a Husky robot; including sensor setup and **ROS** Node configuration.
- Joint first author for the paper: Sharma D, **Kuwajerwala A**, Shkurti F. *Augmenting Imitation Experience via Equivariant Representations.* arxiv.org/abs/2110.07668 (**Accepted @ ICRA 2022**)

Software Developer, EPSON Jul. 2018 – Apr. 2019
Machine Vision Team, Robotics Department, EPSON Canada *Markham, ON*

- Developed 3D object detection and pose estimation technologies for commercial bin picking robots.
- Automated evaluation tasks using **Python** and **Bash**, increasing (upto 5x) the amount of tasks run each day.
- Evaluated and debugged algorithms, analyzed research results to diagnose and fix detection/estimation issues.

Projects

All code available on Github – click the links below!

Model Based RL for Autonomous Driving | *Python, PyTorch, OpenAI Gym* Dec. 2021
Modelling Uncertainty in Neural Networks | *Python, PyTorch* Dec. 2021
Backwards Reachability Analysis Tutorial | *Matlab* Dec. 2020
Feature Visualization for ANNs (Workshop) | *Jupyter Notebook, Python, Tensorflow* Dec. 2019
NeoCirkuits (Android App) | *Java, Android Studio* Summer 2018

Education

University of Montréal & Mila (Currently Enrolled)
M.Sc, Computer Science (Robotics and Artificial Intelligence) *Sep. 2021 – May 2023*

- **Supervisor:** Prof. Liam Paull, director of the Montreal Robotics and Embodied AI Lab.
- **Preprint:** *ConceptFusion: Open-set Multimodal 3D Mapping* **Link:** concept-fusion.github.io

University of Toronto
H.B.Sc, Computer Science & Math ***CGPA:*** *3.63* *Sep. 2016 – May 2020*

- **Award:** Received the NSERC Undergraduate Student Research Award, a value of $5600. (2020)
- **Extracurricular:** Co-Founder & Head of Operations of the Robotics Club. (2019-2020)
- **Teaching Assistant:** Mobile Robotics (CSC477), Data Structures (CSC263), Theory of Computation (CSC236).

Technical Skills

Languages: Python, Julia, C/C++, Java, SQL
Developer Tools: Git, ROS, Amazon Web Services, OpenAI Gym, Android Studio, CUDA, ssh, VNC
Libraries: PyTorch, Tensorflow, OpenCV, pandas, NumPy, scipy, Matplotlib, Plotly